



***Econometric models for the design  
and management of regulated  
parking systems***

***Gonzalo Antolín San Martín***



# Content

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# First year objectives

- **Stated Preference (SP) survey.**

- Free on-street parking (FOSP).
- Paid on-street parking (POSP).
- Paid Underground Parking (PUP).
- Park and Ride (P&R).

- **Revealed Preference (RP) survey.**

# Second year objectives

- **Development of discrete choice models considering systematic and random taste variation.**
  - The experiment was design showing to each user only the scenarios with the available alternatives in the zone where they stopped.
  - Non-resident parking users are more willing to pay for parking than residents in the study area.
  - The cruising time parameter relative to FOSP and POSP parking was significant, which highlight its importance for users.

Tabla 5. Modelo estimado.

Variable	Coefficiente	Test-t
Parámetros aleatorios en la función de utilidad		
$\alpha_{taro}$	-.677	-5.322
$\alpha_{tars}$	-.456	-3.221
Parámetros NO aleatorios en la función de utilidad		
$\alpha_{tbul}$	-.046	-8.109
$\alpha_{tdl}$	-.081	-4.823
CO	-1.313	-5.388
$\alpha_{tr}$	.701	2.009
$\alpha_{tbuo}$	-.063	-5.688
$\alpha_{tmaxo}$	.087	3.322
CS	-.748	-2.520
$\alpha_{agec}$	.518	1.573
$\alpha_{tds}$	-.116	-3.734
$\alpha_{js}$	.056	3.680
CM	-1.946	-3.463
$\alpha_{tarc}$	-.363	-1.803
$\alpha_{tdc}$	-.066	-2.286
$\alpha_{tmaxc}$	.020	1.404
Interacciones de parámetros aleatorios con variables socioeconómicas		
$\alpha_{tsans}$	-.787	-3.107
Desviación de la distribuciones de los parámetros aleatorios		
NsTaro	.904	6.504
NsTars	.996	6.200
Logverosimilitud		-1116.434
Logverosimilitud (Solo Constantes)		-1339.495

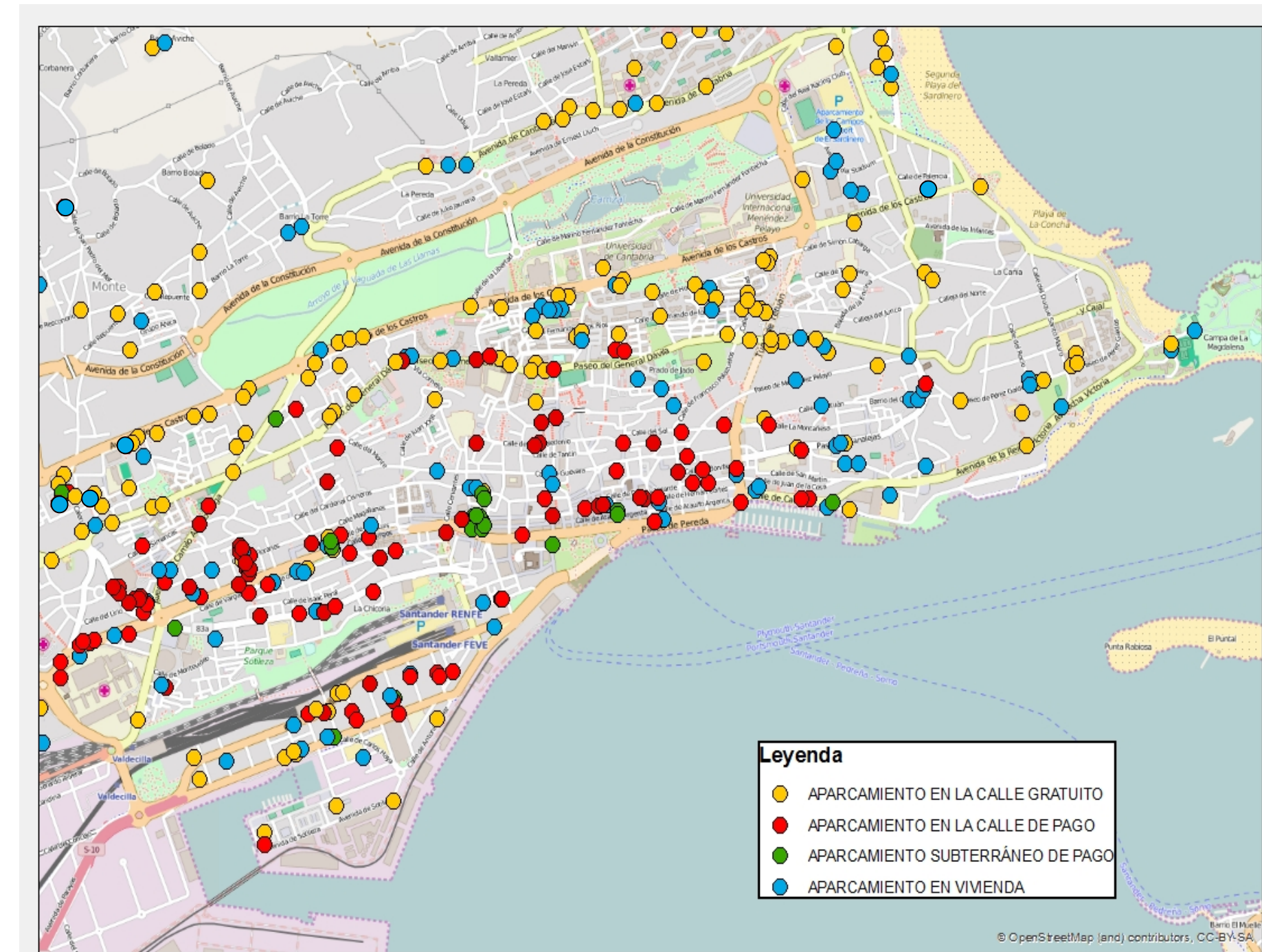
# Second year objectives

- **Modelling parking behaviour considering heterogeneity.**
  - All the analysed groups of users have a worse perception of access time to final destination than they do of cruising time for parking.
  - Users of FOSP are more willing to change to POSP or P&R if the maximum allowed time for parking is increased.
  - For users of PUP the time spent reaching their destination is more important than the time spend finding a parking.



# Second year objectives

- Data collected in revealed preference survey.
  - Most drivers make trips between areas of free on-street parking (FOSP).
  - The average occupancy in all trips types, regardless of the chosen parking alternative is quite low. In all cases the values were below 2 people / vehicle.



# Contributions

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- Conference papers

- Antolín, G., dell'Olio, L., Moura, J. L., & Ibeas, A. (2015). Modelo de comportamiento del usuario en la búsqueda de aparcamiento. *XVII Congreso Chileno de Ingeniería de Transporte. Concepción (Chile)*.
- Antolín, G., Ibeas, A., Borja, A. & L. dell'Olio (2016). Modelling parking behaviour considering heterogeneity. *XVII Congreso de Ingeniería del Transporte. Valencia (España)*.

- Posters

- Antolín, G., Ibeas, A., Borja, A. & L. dell'Olio (2016). Modelo comportamental del usuario en la búsqueda de aparcamiento. *XIX Congreso Panamericano de Ingeniería de Tránsito, Transporte y Logística. Ciudad de México (México)*.

# Contributions

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- Journal papers

- Antolín, G., Barreda, R., Cordera, R., Borja, A., dell'Olio, L., Moura, J. L., & Ibeas, A. (2016). Metodología de diseño de encuestas origen-destino incorporando análisis del estacionamiento. *Ingeniería de Transporte*, 19(1).
- Antolín, G., dell'Olio, L., Moura, J. L., & Ibeas, A. (2016). Comportamiento en la búsqueda de aparcamiento teniendo en cuenta los gustos de los usuarios. *Ingeniería de Transporte (In review)*.
- Antolín, G., Ibeas, A., Borja, A. & L. dell'Olio (2016). Modelling parking behaviour considering heterogeneity. *Transport Policy (In review)*.



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